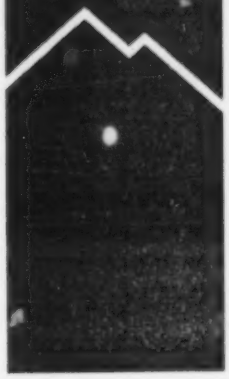
PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

BRITISH
COLUMBIA



A Reconnaissance Survey Of McIntyre Lake

D. A. Jesson
1989

PWFWCP Report No. 91

105-02855/

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

Citation: D. A. Jesson. 1989. A reconnaissance survey of McIntyre Lake. Peace/Williston Fish and Wildlife Compensation Program, Report No. 91. 19pp plus appendices.

Author(s): Duane A. Jesson[1]
Address(es): [1] Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave., 3rd Floor Prince George, B.C. V2L 3H9

A RECONNAISSANCE SURVEY OF

MCINTYRE LAKE

WATERSHED: PARSNIP RIVER

DATE OF SURVEY: JUNE 26. 27. 28. 1989

FIELD CREW LEADER: D.A. JESSON

FIELD ASSISTANT: M.G. LABACH

REPORT PREPARED BY: D.A. JESSON

WILLISTON FISHERIES PROJECT

B. C. HYDRO

ENVIRONMENTAL RESOURCES

and

MINISTRY OF ENVIRONMENT

RECREATIONAL FISHERIES BRANCH

RELEASED BY: _____

D.H.G. Ableson, Regional Fisheries Biologist

LAKE: MCINTYRE **SYSTEM NAME: UNNAMED C.**

A.S.A.P. REFERENCE NO.: SYSTEM NO: 25-1200-040-010

DATA ON FILE FOR THIS SURVEY

Location	x	Dissolved O2/Temp. Profiles	x
Physical Data	x	Netting Record	x
Bench Mark	x	Lake Catch Summary	x
Terrain Features	x	Individual Fish Data	x
Access	x	Fish Preserved	-
Resorts and Campsites	x	Stomach Analysis	x
Other Developments	x	Scale Reading	x
Obstructions and Pollutions	x	Location of Inventory Sites	x
Special Restrictions	x	Photograph Directory	x
Aquatic Plants	x	Appendices:	
Wildlife Observations	x	A: Water Chemistry Analysis	x
Miscellaneous Comments	x	B: Tributary Stream Data	x
Lake Drainage	x	Bathymetric Map Reduction	x
Fisheries Management Comments	x	Bathymetric Map	x
History of Previous Surveys	x		
Water Chemistry Summary	x		

LOCATION

Location:	29 km south of Mackenzie		
Elevation:	709 m +/-		
Latitude/Longitude:	55°03'29":123°05'06"	U.T.M.:	10.4945.61010
Management Unit:	7-24	N.T.S. Map No.:	930/3

Drainage: Outlet C. –> August C. –> Pack R. –> Tudyah L. –> Pack R. –> Williston L. (Parsnip Reach) –> Peace R.

PHYSICAL DATA

Lake Drainage Area:	-km^2	Volume:	11,600,000 m^2
Water Surface Area:	1,050,000 m^2	Flushing Rate:	
Area above 6 m contour:	368,000 m^2	Perimeter of Islands:	800 m
Shoreline Perimeter:	9,450 m	Number of Islands:	5
Maximum Depth:	27.5 m	Mean Depth:	11.0 m
Filterable Residue (TDS):	84 mg/l	Secchi Reading:	8.4 m

Sounding Device: Lowrance X-15 Elevation Source: Contour Interpolation

BENCHMARK

(Iron spike, center of red circle) located 2.0 m above present water level in a 30 cm diameter Lodgepole pine, on a north point of land on the east shore of the lake. The tree is located 2.0 m from present edge of water.

High water mark: 0.25 m above water level at time of survey.

Lake: MCINTYRE

TERRAIN FEATURES

Immediate Shoreline:

The shoreline is steeply sloped (making boater and angler access difficult) around the entire lake with the exception of some low sloping areas at the north and south ends. The lake bottom drops off steeply from shore except in bays containing marsh (primarily north shore). Lake bottom substrate, near shore, is mainly silt overlying cobble, except for organic fines that dominate shallow bays. No beach area is present. A bedrock outcrop is located on the ridge at the NW corner of the lake. Deadfall around the perimeter of the lake makes boating near shore difficult. Gravel shoals exist off the points and small island in the eastern most bay. The dense shore zone cover is mainly deciduous (alder, birch, poplar).

Surrounding Country:

McIntyre Lake is surrounded by two steep north-south running ridges. It is situated within the sub-boreal spruce biogeoclimatic zone. Forest cover is complete and dense, consisting of a predominately coniferous forest (Lodgepole pine, spruce) and some deciduous. It appears to be mature first growth. The single exception to this is in the extreme south, where the forest is in late secondary succession (old cut block). The forest floor is a thick layer of humus overlying cobble and gravel.

Lake: MCINTYRE

ACCESS

Directions:

Fly in with helicopter or float plane. It is approximately a 15 minute ride by helicopter from Windy Point.

Road Type and Conditions:

No road access at present. Jim Ladds, Forest Recreation Officer in Mackenzie, indicated road access via cut block establishment could come as early as 1992.

Restrictions:

None noted.

RESORTS AND CAMPSITES

None. Jim Ladds, Forest Recreation Officer in Mackenzie, indicated McIntyre Lake is being considered for potential recreation site development pending the establishment of road access.

OTHER DEVELOPMENTS

One old cabin, constructed in 1968, is situated on the east shore of the lake.

Lake: **MCINTYRE**

OBSTRUCTIONS AND POLLUTIONS

One remnant beaver dam is present on the outlet at the lake. It is not an obstruction to fish passage.

SPECIAL RESTRICTIONS

None noted.

AQUATIC PLANTS

Aquatic plants were moderately abundant occurring primarily in the shallows of the bays.

The following species were identified in the field. None were collected.

Nuphar sp.	Potamogeton natans
Potamogeton richardsonii	Ceratophyllum sp.
Equisetum fluviatile	Myriophyllum sp.

WILDLIFE OBSERVATIONS

Two beaver lodges, one beaver and one bald eagle were sighted.

MISCELLANEOUS COMMENTS

Freshwater clams present in shallows.

Bathymetric map: The lake outline is from enlargements of aerial photographs BC 7443 No. 201 and BC 7443 No. 267, flown September, 1973.

Evidence of shore spawning (gravel cleaned of overlying silt) was observed in the southern most bays.

Lake: **MCINTYRE**

LAKE DRAINAGE

General:

McIntyre Lake has no inlets and one outlet. Runoff into the lake from low-lying areas probably occurs during spring snow melt and heavy rain. The outlet flows south into a marshy section of August C., which flows into the Pack R..

The outlet to McIntyre Lake is not indicated on NTS map 93-0/3 edition 3 (1981).

Major Systems:

There are no major systems.

Minor Systems:

Several "wet" back channels extend from the lake into low-lying marsh areas. The channels range up to 30 m in length, one meter in width and 30 cm in depth. They have no fisheries value.

Unnamed C. - outlet

This small creek drains south from McIntyre Lake. It has a gradient of up to 4% and a water temperature of 14.5°C. At approximately 250 m down-stream from the lake, the wetted width is 0.70 m and maximum depth 13.0 cm. Stream velocity at this point was measured at 0.09 m/sec., by floating chip. This creek has some salmonid spawning habitat and is probably responsible for the majority of salmonid recruitment back to the lake. The point sample site is a possible coarse fish barrier location if the lake is ever considered for chemical rehabilitation.

Lake: **MCINTYRE**

FISHERIES MANAGEMENT COMMENTS

A distinct shoreline and little marsh area makes McIntyre Lake a potential candidate for chemical rehabilitation, providing road access is established. The abundant number of coarse fish (especially northern Squawfish) would render stocking futile, unless larger (catchable) rainbow trout were stocked.

HISTORY OF PREVIOUS SURVEYS

Lake Surveys:

No previous surveys known.

Other Related Surveys:

None known.

Lake: **MCINTYRE**

WATER CHEMISTRY SUMMARY Limnology Station No. 1

Field Conditions:

Date:	June 28, 1989		
Time:	1530 hrs	Air Temperature:	19°C
Wind Velocity:	5 to 10 km/hr	Wind Direction:	SW
Cloud Cover:	4/10 O.C.	Surface Condition:	moderate ripple
Secchi Disc:	8.4 m	Water Colour:	greenish blue (turquoise)

Method(s) Used:

Dissolved Oxygen:	YSI model 58 oxygen/temperature meter
Water Temperature:	YSI model 58 oxygen/temperature meter
Air Temperature:	Hand-held alcohol thermometer
pH (field):	Hach colour comparitor
H2S (field):	Hach H2S fieid test kit
Laboratory Used:	Zenon Environmental Inc. B.C. Laboratory Services
Water Sampler:	Verticle Alpha Water Bottle (Vandorn)
Substrate Sampler:	substrate sample not taken

Water Sample Chemistry: SEAM Site No.: Not determined.

	Sampling Depths	
	Surface (0 m)	Lower (20.0 m)
pH (field):	8.4	6.9
pH (lab):	8.4	7.4
Specific Conductance (lab):	143 umhos/cm	165 umhos/cm
Filterable Residue 105°C (lab):	84 mg/l	98 mg/l
H2S (field):	- mg/l	0 mg/l

Bottom Depth:	21.0 m
Substrate Sample Depth:	- m

Comments:

Water samples too long in transit to guarantee accuracy of pH (lab) results.

Lake: **MCINTYRE**

OXYGEN/TEMPERATURE DATA

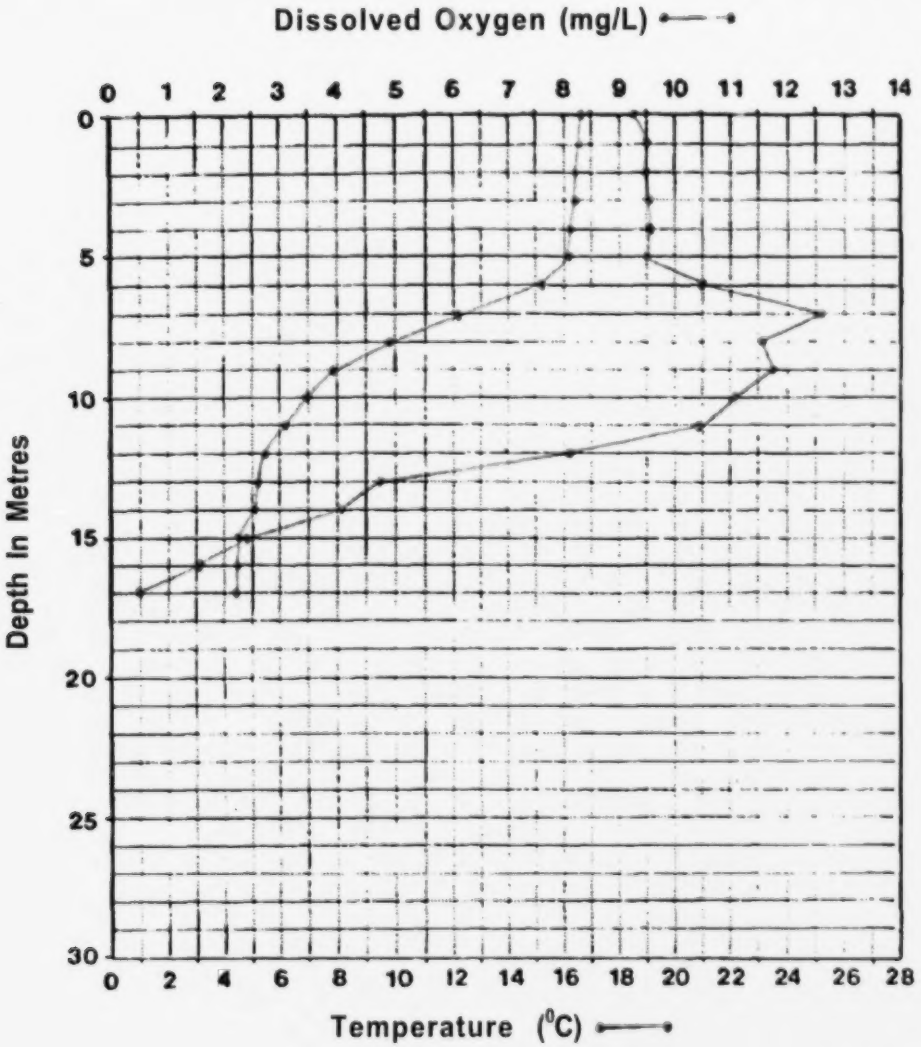
Depth (m)	O2 (mg/l)	Temp (C°)
surface	9.3	16.8
1.0	9.5	16.7
2.0	9.5	16.4
3.0	9.6	16.3
4.0	9.6	16.2
5.0	9.5	16.1
6.0	10.5	15.2
6.5		12.9
7.0	12.6	12.2
7.5		10.4
8.0	11.6	9.9
8.5		7.9
9.0	11.8	7.9
9.5		7.3
10.0	11.1	7.0
11.0	10.4	6.2

Depth (m)	02 (mg/l)	Temp (C°)
12.0	8.2	5.6
13.0	4.8	5.2
14.0	4.1	5.1
15.0	2.4	4.7
16.0	1.6	4.7
17.0	0.5	4.5
21.0	Bottom	

Comments:

Recent winds have resulted in a good mixing of the upper layers of lake water.

DISSOLVED OXYGEN AND TEMPERATURE PROFILE



Lake: MCINTYRE

NESTING RECORD

Mesh sizes experimental order: 25,76,51,89,38,64 mm.

NETTNG SITE #1

Type:	Sinking Monofilament		
Date Set:	June 26, 1989	Time:	1945 hrs
Date lifted:	June 27, 1989	Time:	1200 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	1.5 m
		Substrate:	cobble/large gravel
Deep End Mesh Size:	64 mm	Depth:	12.0 m
		Substrate:	cobble/silt (organics)

Comments:

Approximately 90% of the coarse fish caught were in the first 4 panels from shore. Approximately 60% of the rainbow and all of the lake Whitefish were caught in the last 2 panels.

Lake: **MCINTYRE**

LAKE CATCH SUMMARY

SPECIES	NET SITE NO.				* ANGLED	OTHER	TOTAL	NUMBER SAMPLED	NUMBER PRESERVED	SIZE RANGE (cm)
	1	2	3	4						
Rainbow trout	10				1	-	11	11	--	30.0 - 36.8
Lake Whitefish	3				-	-	3	3	--	36.6 - 37.2
Coarse sucker	40				-	-	40	-	--	35.0 - 41.0
Longnose sucker	7				-	-	7	-	--	21.4 - 39.1
Northern squawfish	56				1	-	57	-	--	12.0 - 43.0
Peamouth chub	36				-	-	36		--	13.5 - 32.8
Redside shiner	5				-	-	5	-	--	9.0 - 9.6

Comments:

* Result of two anglers fishing for two hours with spinning gear.
Some northern Squawfish had blackspot disease.
One course sucker had whitespot disease on the anal and caudal fins.

Minnow Traps:

Bait: Sardines

#	HOURS	DEPTH (m)	SUBSTRATE	SPECIES	SIZE RANGE (cm)
1	19.50	0.25	large gravel	2 redside shiner	5.9 - 9.2
2	19.75	0.50	organic	2 redside shiner 1 slimy sculpin	

Lake: MCINTYRE

INDIVIDUAL FISH DATA

Date Captured: June 18, 1989

Method of Capture: Sinking monofilament gillnet

M -Male
F -Female
? -Not Obvious

IMM -Immature
MG -Maturing
MT -Mature
GV -Gravid
SP -Spent
? -Not Obvious

EG -Egg
FR -Fin Ray
HD -Head
ML -Milt
OT -Otolith

SC -Scale
ST -Stomach
TG -Fish Tag
WF -Whole Fish

Species	Fork Length (cm)	Weight (g)	Sex	Gonadal maturity	Sample Type	Age (yr)	Stomach Contents: Plankton	Insects	Fish	Other	Comments
Rainbow	30.0	340	F	MG	SC	2+				Detritus	
Rainbow	30.3	310	F	MG	SC	2+		Chironomids		Detritus	
Rainbow	30.4	320	F	MG	SC	2+		Chironomids		Detritus	Tapeworms in gut
Rainbow	31.0	330	F	MG	SC	2+		Chironomids		Detritus	
Rainbow	31.0	350	M	MG	SC	2+	Zooplankton	Chironomids			
Rainbow	31.2	340	F	MG	SC	2+				Detritus	Internal organs adhered to body wall
Rainbow	31.5	370	F	MG	SC	2+			Unidentified fish		
Rainbow	32.0	355	F	MG	SC	2+					Angled;nice & silver
Rainbow	33.4	420	F	MG	SC	2+		Chironomids		Detritus	
Rainbow	33.6	400	F	MG	SC	2+			Unidentified fish		
Rainbow	36.8	510	M	SP	SC	2+					
Lake Whitefish	36.6	595	F	MG	SC	4+	Zooplankton			Detritus	Tapeworm cysts on
Lake Whitefish	37.2	650	M	MG	SC	4+	Zooplankton				Adult tapeworms in gut
Lake Whitefish	37.2	570	F	MG	SC	4+		Chironomids		Detritus	

LOCATION OF INVENTORY SITES

Figure 1

Lake: McIntyre
Reference No.: B.C. 7443:201 & 267
Reference Date: September, 1973
Scale: 1: 16,663

1 Plate number, area, and direction

2 Point sample, number, and location

Bench mark

LS 1 Limno station location and number

O-NS 1-O Netting site location and number

1 Stream flow direction and number

Lake: MCINTYRE

PHOTOGRAPH DIRECTORY

Negative #	Plate #	Description
R4: 5	1	Aerial view of McIntyre Lake looking south.
R4: 13A,14A,15A	2	Panoramic view of McIntyre Lake shoreline from the limno station looking northwest. The arrow indicates the location of an exposed bedrock outcrop.
R4: 11A	3	View south from the limno station.
R4: 10A	4	View of McIntyre Lake looking north from outlet.
R4: 8A	5	View of the remnant beaver dam on the outlet to McIntyre Lake located at the lake. The dam is not an obstruction to fish passage.
R4: 9A	6	View looking upstream on outlet creek, approximately 250 m downstream of the lake. The site is a possible coarse fish barrier location due to the steep banks and a natural drop of approximately 25 cm.

MCINTYRE LAKE

Plate 1: Aerial view of McIntyre Lake looking south

Plate 2: Panoramic view of McIntyre Lake shoreline from the limno station looking northwest. The arrow indicates the location on an exposed bedrock outcrop.

Plate 3: View south from the limno station

Plate 4: View of McIntyre Lake looking north from outlet

Plate 5: View of the remnant beaver dam on the outlet to McIntyre Lake located at the lake. The dam is not an obstruction to fish passage.

Plate 6: View looking upstream on outlet creek, approximately 250 m downstream of the lake. The site is a possible coarse fish barrier location due to the steep banks and a natural drop of approximately 25 cm.

Appendix A

LABORATORY REPORT

Water Chemistry Analysis

B.C. LABORATORY SERVICES
Report for Form 03000107

Ministry Program ATTN: DUANE JESSON

Site: MCINTYRE LAKE

Submitted by (Author): DUANE JESSON

Address (CO): RECREATIONAL FISHERIES
1011 FOURTH AVENUE
PRINCE GEORGE, B.C.
V2L 3H9

Phone No 565-6944

D.C. MINISTRY OF ENVIRONMENT
AUG 18 1989
PRINCE GEORGE, B.C.

Audit Sample ( )
Client study reference code ( )
Sampling agency code (91)

Site (NOSITE) MCINTYRE LAKE

Sample Category ( )
Sample Status (FW) Fresh water
Sample Description ( ) Undefined

This form was processed on the computer on 9-JUL-1989 as REGULAR
The cost for analyzing samples for this form is

Routine analysis	$	114.00
Special analysis	$	0.00
Total	$	114.00

ZENON ENVIRONMENTAL INC.
B.C. LABORATORY SERVICES
Report Date: 02000107

Sample 97005031

MOUNTAIRE FARM

From 89/06/28 0001 To 89/06/28 0001
Depth Range 0.0 0.0 Tide
Sample State Fresh Water
Sample Comment

Parameter Description	Result	Units	Analytical Technique (Species/Medium/Process)
pH		pH units	Automated pH Meter (0004)(02/02/01)
Result 6.4 pH units. Analysed outside of optimal time frame.			
Residue (Non-Filterable)	1	mg/L	Gravimetric Buchner, 105C (0008)(70/02/01)
Specific Conductance	142	uS/cm	Cond Meter Siebold (0011)(50/02/01)
Res. Filterable (Dry)	81	mg/L	Gravimetric 1.0u Filter (0078)(75/02/01)
Alkalinity Total as CaCO3		mg/L	Automated Electrometer (0102)(10/02/01)
Result [illegible] Analysed outside of optimal time frame.			

From :89/06/27 0900 To :89/06/28 0702
Depth Range 20.0 - 30.0 Tide
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcose/Medium/Pres'n)
pH	7.1	pH units	Automated pH Meter (OC04120/02/01)
Result 7.1 pH units Analysed outside of optimal time frame.			
Residue Nonfilt	1	mg/L	Gravimetric Buchner, 105C (OC08102/02/01)
Specific Conductance	750	uS/cm	Conc Meter Siebold (OC11160/02/01)
Res. Filterable 1.0u	<8	mg/L	Gravimetric 1.0u Filter (OC08103/02/01)
Alkalinity Total 4.5	7	mg/L	Automated Electrometer (C10421210/02/01)
Result 7 mg/L Analysed outside of optimal time frame.			

Lake: **MCINTYRE**

Appendix B

TRIBUTARY STREAM DATA

Lake: MCINTYRE

System Name: Unnamed Creek outlet

System No.: 25-1200-040-010

Site location: Sample site #1, approximately 250 m downstream of lake.

Channel Width:	0.70 m	Water Temp.:	14.5°C
Wetted Width:	0.70 m	Stage (flow):	moderate
Max. Depth:	13.0 cm	Velocity:	0.09 m/sec
Avg. Depth:	10.0 cm	Slope:	2%
Turbidity:	13.0 cm	Colour:	gin clear

Flood Signs (height/type):

Height: 13 cm
Type: Eroded bank - exposed root wads.

Bed Material: Compaction: moderate

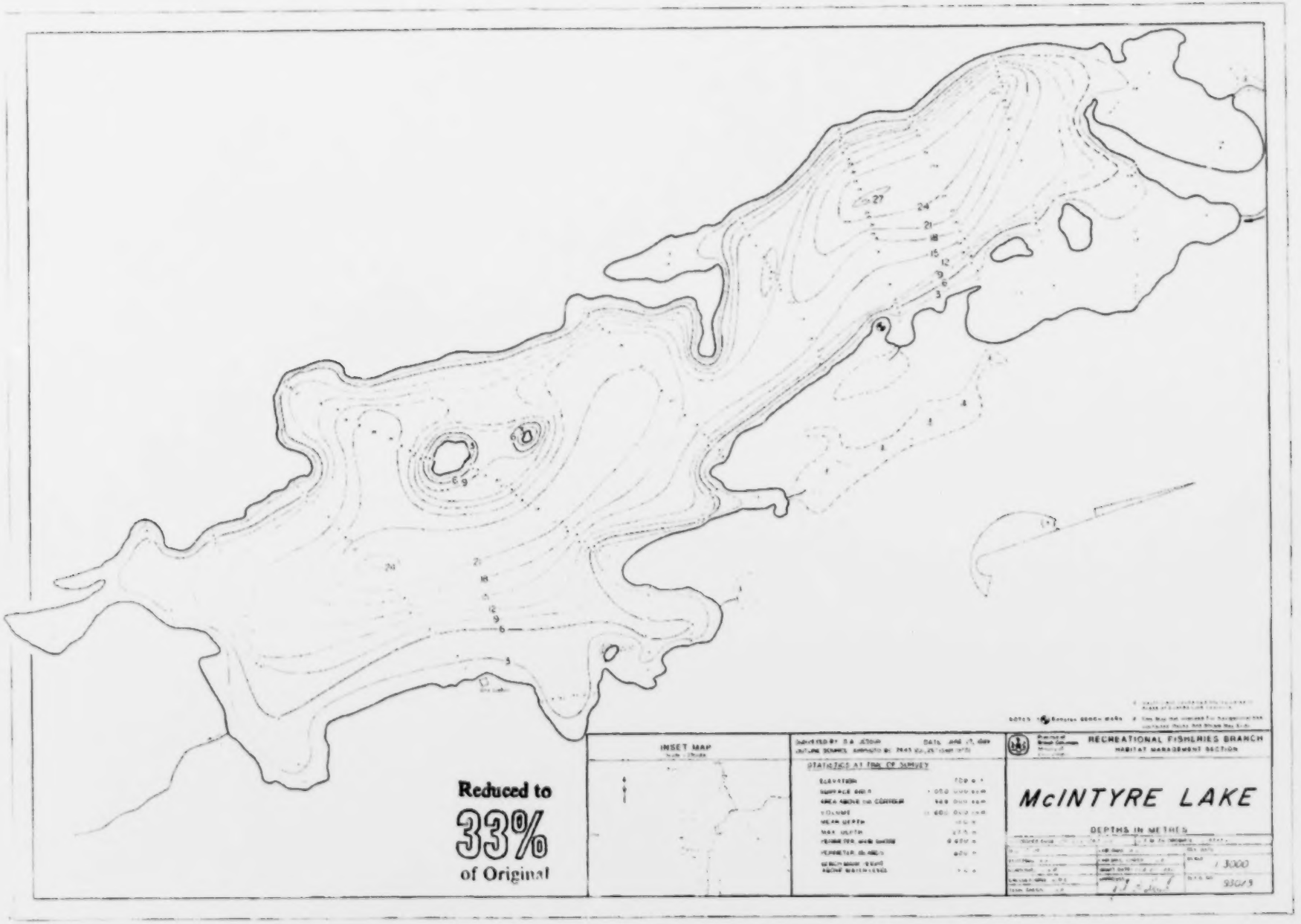
fines:	50%
gravels:	30% - large gravel 20%; small gravel 10%
larges:	20%
bedrock:	0%

Banks (form, height, stability):

Left Bank: steep/22 cm/moderate: root wads and moss stabilize bank
Right Bank: steep with slight under cut /37 cm/moderate: root wads and moss stabilize bank

Comments:

- Slope estimated due to difficulty of standing at water level.
- Stream is clear to bottom.
- Point site is possible coarse fish barrier location.
- Stream is overgrown with dense cover of alder, grasses, shrubs and low height bushes.
- Lots of deadfall over creek. Evidence of old cut block (i.e. tree stumps and old overgrown road) along left and right stream banks.
- Patches of spawning gravel present down to point site location offering limited spawning.
- This outlet is probably responsible for all of the salmonid recruitment to the lake.


INSET MAP
Reduced to
33%
of Original
RECREATIONAL FISHERIES BRANCH
HABITAT MANAGEMENT SECTION
McINTYRE LAKE
DEPTHS IN METRES
1:3000